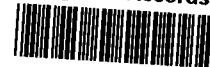




Roy F. Weston, Inc.
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EPA Region 5 Records Ctr.



230458

17 May 2000

Mr. Ron Murawski, SR-6J
Work Assignment Manager
U.S. Environmental Protection Agency, Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

U.S. EPA Contract No.: 68-W7-0026

Work Assignment No.: 024-ROBE-052F

Document Control No.: RFW024-2B-AFLB

U.S. EPA Contract No.: 68-W7-0026

Subject: Oversight Report, Pre-Design Investigations, H.O.D. Landfill, Antioch, Illinois

Dear Mr. Murawski:

Roy F. Weston, Inc. (WESTON®) is pleased to submit an oversight report for work done by PRPs during pre-design investigations at the H.O.D. Landfill. The oversight was provided by Mr. Joseph Corns of EDI. The oversight report includes summary of daily activities, photo-documentation, and copies of the field notes.

If you have any questions please call me at (847) 918-4051.

Very Truly Yours,

ROY F. WESTON, INC.

Omprakash S. Patel
Site Manager

OSP/sk
Enclosure

CH01\PUBLIC\WO\RAC\024\28603LTR.WPD

RFW024-2B-AFLB

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**REMEDIAL DESIGN OVERSIGHT
PRE-DESIGN INVESTIGATIONS
H.O.D. LANDFILL
ANTIOCH, ILLINOIS**

May 2000

Prepared for

U.S. Environmental Protection Agency
77 West Jackson Boulevard
Chicago, Illinois 60604

This document was prepared in accordance with U.S. EPA Contract No. 68-W7-0026, WESTON Region V Response Action Contract (RAC) and contains confidential business information.

Document Control No. RFW024-2B-AFLB

**OVERSIGHT OF PRE-REMEDIAL DESIGN INVESTIGATION
AT H. O. D. LANDFILL
ANTIOCH, ILLINOIS**

This report summarizes the field oversight of landfill gas characterization, well dimension measurement, ground cover characterization, water level measurement, well installation, slug testing, and groundwater sampling conducted by RMT, Inc. (RMT) at the H. O. D. Landfill site. Oversight of the activities was provided by Environmental Design International, Inc. (EDI), a Team Subcontractor of Roy F. Weston (WESTON). One EDI representative was present on-site during field activities. It should be noted that the oversight was not provided for all field activities. Photo documentation, and copies of field log notes are included in this package.

8 November 1999

The following persons were present at the site:

Mark Torressani – RMT
James Tinjum, – RMT
Joseph Corns – EDI

James calibrated the gas monitoring equipment, which included a LandTek Gem 500 portable gas analyzer, and a Thermo-Environmental organic vapor monitor. Mark constructed a downhole obstruction probe by attaching a four-foot length of four-inch diameter PVC pipe to a length of poly-rope. He then marked the rope in five-foot increments. Shortly after constructing the probe, Mark left the site.

The activities conducted included the collection of landfill gas composition data from wells, the collection of depth to leachate data in wells, the determination of well depth and downhole casing condition, the determination of above ground casing condition, and the determination of landfill cover condition. The types of wells inspected included gas flare wells (designated GFW-x), leachate piezometer wells (designated LP-x), piezometer wells (designated PZ-x) and pump and treat system wells (designated P-x).

The leachate piezometers consisted of a six-inch diameter PVC screen and riser assembly, with the surface extension protected by a steel outer casing. The piezometer wells consisted of a four-inch diameter PVC screen and riser assembly, with the surface extension protected by a steel outer casing. The leachate pumping wells are covered with a corrugated metal well protector and pumping equipment was inserted down the wells.

James then began collecting data at each well. He first opened the top of each well, (either by removing the well cap or cutting through the duct tape) and inserted the intake hose from the LandTek into the well. The LandTek displays data including percent methane, carbon dioxide, oxygen, and balance gases. The balance gases consist mainly of nitrogen. The data from the

LandTek was recorded in RMT's log book for each well. Following characterization of the gases, James measured the depth to liquid in each well, and recorded the data in the log book. Finally, James inserted the obstruction probe into each well, and lowered it to the well bottom. He verified that each well was unobstructed, and determined the wells' total depth. The data collection process was repeated at each of the thirty-four wells included in this study. The well data collection activities described above were conducted from 9:00 a.m. until sundown (4:30 p.m.) on November 8, 1999. The wells investigated on November 8, 1999 included GWF-1, GWF-2, GWF-3, GWF-9, GWF-10, GWF-11, LP-1, LP-2, LP-3, LP-4, LP-5, LP-6, LP-10, LP-11, LP-12, P-13, LP-14, and P-1.

9 November 1999

The following persons were present at the site:

Mark Torressani – RMT
Ron Murawski – U.S. EPA
Joseph Corns – EDI

On the morning of November 9, 1999, Mr. James Tinjum (RMT) arrived at the site at approximately 7:00 a.m., calibrated his instruments, and continued with the well investigation procedures begun on the previous day. Mr. Corns arrived at the site at approximately 8:45 a.m. On November 9, 1999, at 9:45 a.m., Mr. Ron Murawski of the United States Environmental Protection Agency (USEPA) arrived at the site to observe the data collection activities. Mr. Murawski left the site after lunch.

The gas flare wells consisted of an eight inch diameter PVC well riser and screen assembly with an above grade extension. Prior to the investigation, each gas flare well was extended with a steel flare pipe and flame bucket that had been attached to the top of the PVC riser with a flange. The flare pipes were removed, either by unbolting the flanges, or saw-cutting the PVC below the flanges, and allowing the flare pipes to fall onto the ground. The tops of the PVC extensions were covered with duct tape. The flare removal was conducted at some time shortly before the investigation.

Overall well investigative procedures conducted on November 8, 1999 were observed to be in compliance with the planning documents.

On this day, the following wells were investigated: GWF-4, GWF-5, GWF-6, GWF-7, GWF-8, GWF-12, GWF-13, GWF-14, LP-7, LP-8, LP-9, P-2A, P-8, P-9, and PZ-3A.

Following the data collection activities described above, James went to each well and measured the PVC casing stick-up, the steel protective casing stick-up where applicable, and noted the condition of each well and flare where applicable. Also noted while traversing the site was the

condition of the landfill cover. Lastly, James measured the depth to leachate in two manholes located adjacent to the waste liquids storage tanker.

Mr. Tinjum was to collect magnehelic gas pressure data from shut-in gas well flares by connecting special pressure gages to an outlet on the flares. The magnehelic pressure represents gas pressure within the landfill under confined conditions. James was not able to collect magnehelic pressure data from the flares because the flares had been removed and the wells were venting through the duct tape covers. James recorded qualitative observations of gas pressure, based on the visible volume of gas exhausting from each well.

As of November 9, 1999, Waste Management Inc. had not secured access to several monitoring well locations, and thus data was not collected from the wells.

Overall investigative procedures conducted on November 9, 1999 were observed to be in compliance with the planning documents, with the exception of the gas pressure measurements.

2 December 1999

The following persons were present at the site:

Rob Hafemeister – RMT
Ron Murawski – U.S. EPA
Omprakash Patel – WESTON
Joseph Corns – EDI

The activities to be performed at the H. O. D. landfill, included inspection of monitoring wells chosen to be sampled, and monitor the measurement of water levels in those wells.

The inspection work included the opening of the well covers on each subject well, inspection of the wells, and inspection of any dedicated sampling pumps present in the wells. Water levels were then measured in each well from the tops of the inner riser pipes. In addition, RMT, Inc. placed dedicated pressure transducers in a total of five (5) wells to document fluctuations in water levels in wells influenced by the pumping of Village of Antioch water supply wells.

RMT Inc. inspected and measured the water levels at wells US3-S, US3-I, US3-D, W4-S, US2-D, W3-SA, W3-SB, W3-D, 5-S, US4-S, US4-D, US6-S, US6-I, US6-D, PZ3U, PZ4U, G14-S, G14-D, W8-D, W7-D, PZ-1, W2-D, US7-S, G11-S, G11-D, US5-D, US1-S, and US1-D. Temporary dedicated continuous reading pressure transducers were placed in wells US3-S, US3-D, W3-D, W3-SA, US1-S, and US1-D. Each transducer was calibrated with a laptop computer and the known manually measured water level at each installation.

Mr. Ron Murawski of the U.S. EPA and Omprakash Patel arrived at the site at approximately 11:00 a.m. on this day and stayed at the site little after lunch. RMT representative removed the dedicated

sampling pump from well US3-D and install a dedicated pressure transducer after consultation with Ron Murawski.

Overall, the measurement, inspection, and transducers installation activities conducted on December 2, 1999 were conducted according to standard environmental practices and were observed to be in compliance with the planning documents. One issue that was not resolved on this day was the determination of which Village of Antioch municipal wells were being pumped at any given time.

7 February 2000

The following persons were present at the site:

Pete Chase – RMT
Larry Beichel– Waste Management
Joseph Corns – EDI

On the morning of February 7, 2000, Mr. Pete Chase of RMT, Inc. arrived at the site at approximately 9:00 a.m. At approximately 10:00 a.m., Mr. Larry Beichel of Waste Management, Inc. arrived at the site and showed Mr. Chase the location of a hydrant to be used for obtaining drilling water. At approximately 11:00 a.m., a drilling crew with a drill rig and support truck arrived at the site. The drillers were from the Boart-Longyear Drilling Company of Shofield, Wisconsin. The monitoring well was to be installed on the grounds of the Antioch High School athletic field, just north of Highway 176. A hollow stem auger and mud rotary techniques were to be utilized for well installation. The drilling crew filled the water tank on the support truck with water, and set up the drill rig on the well location. At approximately 12:25 p.m., it was discovered that wiring on the drill rig was burned up and the drill rig could not be shut down using normal operating procedures. The drilling effort for the day was then stopped while the drilling crew obtained another drill rig.

8 February 2000

The following persons were present at the site:

Pete Chase – RMT
Joseph Corns – EDI

On the morning of February 8, 2000, Mr. Chase and the drill crew with an operating drill rig were present on the site by 8:00 a.m. The drillers drilled with hollow stem augers to a depth of twenty feet. Split spoon samples of the underlying material were obtained at five-foot intervals. When a depth of twenty feet was reached, the drillers pulled the augers, set a seal-off casing to a depth of twenty feet, and grouted the seal-off casing with bentonite grout. The casing was set so that its bottom was seated in an underlying clay confining layer. The drillers then set up and began drilling using the mud-rotary technique, and drilled to a depth of 63 feet, obtaining a split spoon soil sample

every five feet. Also on this date, Mr. Ron Murawski of the USEPA and Mr. Om Patel of Weston arrived at the site to observe drilling procedures at approximately 10:30 a.m.

9 February 2000

The following persons were present at the site:

Pete Chase – RMT
Ron Murawski – U.S. EPA
Omprakash Patel – WESTON
Joseph Corns – EDI

On the morning of February 9, 2000, Mr. Chase and the drill crew were present on-site by 8:00 a.m. The borehole was continued to a depth of 100 feet. The geologic profile consisted of clay till to a depth of approximately 85 feet, where fine to medium sand was encountered. The drillers then removed the drilling tools from the borehole and began constructing the well. The well was constructed of a ten foot length of two inch diameter PVC well screen, and continued with two inch PVC riser pipe to an elevation above the ground surface. The top of the well screen was set at 88.5 feet below ground surface. Joe Corns at this time had several discussions with PMT representatives and Om Patel of Weston and Ron Murawski of the USEPA concerning the placement of the well screen. Although RMT was advised by Joe Corns to set the top of the well screen at or slightly above the clay till/ sand interface in the borehole, RMT insisted on setting the well at the lower depth. Mr. Corns was informed by RMT that the volatile compounds being tested for in well water were all in the dissolved phase and would not be found near the top of the aquifer. Mr. Corns was informed that no free product, floating volatile compounds were present in the aquifer. The total depth drilled was 100 feet below the ground surface. Following placement of the well screen and riser pipe in the borehole, the drillers flushed the borehole of drilling mud by pumping clean water through the well, forcing the drilling mud up out of the borehole. Coarse filter pack sand was then placed around the well to a level of 85 feet below ground surface, fine filter pack sand was placed to a level of 82 feet below the ground surface, and bentonite pellets were then placed to a level of 77 feet below the ground surface. The drillers then mixed a liquid bentonite grout, and placed it around the well to a level three feet below the ground surface.

16 February 2000

The following persons were present at the site:

Rob Hafemeister – RMT
Joseph Corns – EDI

On February 16, 2000, Mr. Rob Hafemeister of RMT, Inc. arrived at the H. O. D. site at approximately 9:15 a.m. Rob proceeded to well US5-D and labeled all sampling bottles and calibrated the pH, conductivity, eH, temperature and turbidity meters. Sample bottles were provided

for VOC, major cations, alkalinity, chloride, sulfate, nitrate, nitrite, total kjedahl nitrogen, ammonia, orthophosphate, BOD, TOC, methane, ethane, ethene, and TDS. Sample labels were marked for STL laboratory in Buffalo, New York. Dissolved iron and dissolved oxygen were measured in the field using colorimetric tubes. Between 12:00 p.m. and 3:00 p.m., Rob experienced difficulties calibrating all the field instruments, and then getting the gasoline engined air compressor to run. Finally, at around 3:00 p.m., the engine on the air compressor began working, and Rob was able to purge the well. Monitoring wells were sampled using the micro-purge technique. In this method, an air operated bladder pump is used to remove water from the well screen area at a very low flow rate. In this manner, fresh water is introduced to the area around the pump through the well screen, and overlying water and underlying water are not mixed or disturbed. Water was purged from the wells at a flow rate of 0.5 liters per minute. The total minimum purge volume was three well screen volumes, based on the diameter and length of the well screens. The minimum volume was to be purged if pH, conductivity, eH and temperature stabilized at a constant reading, and turbidity stabilized at a level below 10 units. The field readings were measured for every 1-½ liters of water purged from the wells. During the February 2000 sampling event, RMT's turbidity meter did not function properly, so all wells were purged of six well screen volumes. Well purge water was collected in buckets and later dumped into the leachate collection system manhole on the landfill. Mistakenly, Rob only purged one well volume of water from the well, and returned on a later day to resample it.

17 February 2000

The following persons were present at the site:

Rob Hafemeister – RMT
Lance Bakken – U.S. EPA
Joseph Corns – EDI

On February 17, 2000, Rob was present at the R1-D well by 8:15 a.m. Rob utilized the micro-purge technique, removed six well screen volumes of water from the well, and collected the required samples. The sampling utilized were similar to that described for 16 February 2000. Wells US2-D, US5-D, and W3-D were also purged and sampled on this date. At approximately 3:00 p.m., a field worker Lance Bakken, from RMT arrived to assist Rob in sampling the wells.

21 February 2000

The following persons were present at the site:

Rob Hafemeister – RMT
Joseph Corns – EDI

On February 21, 2000, Rob and Lance returned to the site and sampled wells US6-D, US4-D, and US3-D. Also on February 21, the slug test was conducted on well R1-D on the new well installed

on February 9, 2000. The hydraulic conductivity slug test conducted on well R1-D was performed using a Hermit 3000 data logger and standard pressure transducer and slug.

20 March 2000

The following persons were present at the site:

Rob Hafemeister – RMT

Lance Bakken – RMT

Joseph Corns – EDI

On March 20, 2000, Rob and Lance from RMT arrived at the site at approximately 10:00 a.m. On this day, the RMT representatives purged and sampled wells R1-D and US5-D. All purge and sample protocol discussed above in report for 16 February 2000 were followed.

During the well purging and sampling events in February and March 2000, RMT was observed to follow the appropriate micro-purge sample techniques described in the planning documents. Also, proper decontamination and cross-contamination prevention procedures were observed to be followed.

PHOTO-DOCUMENTATION



Photo 1: 12/2/99 - Monitoring Well Locations US1-S and US1-D



Photo 2: 12/2/99 - Water level reading at US-5D



Photo 3: 12/2/99 - Water level reading at G11-S



Photo 4: 12/2/99 - Water level reading at W2D



Photo 5: 12/2/99 - Water level reading at PZ-1



Photo 6: 12/2/99 - Checking Water level at W7-D



Photo 7: 12\2\99 - Checking water level at W8-D



Photo 8: 12\2\99 - Checking water level at G14-S



Photo 9: 12/2/99 - Checking water level PZ-4U



Photo 10: 12/2/99 - Checking water level in PZ-3U



Photo 11: 12/2/99 - US6-S, US6-I, US6-D



Photo 12: 12/2/99 - 5S, US-4D, US-4S



Photo 13: 12/2/99 - W3-SA, W3-SB, W3-D



Photo 14: 12/2/99 - Placing transducer in W3-D



Photo 15: 12/2/99 - Placing transducer in US3-D



Photo 16: 12/2/99 - US2-D well

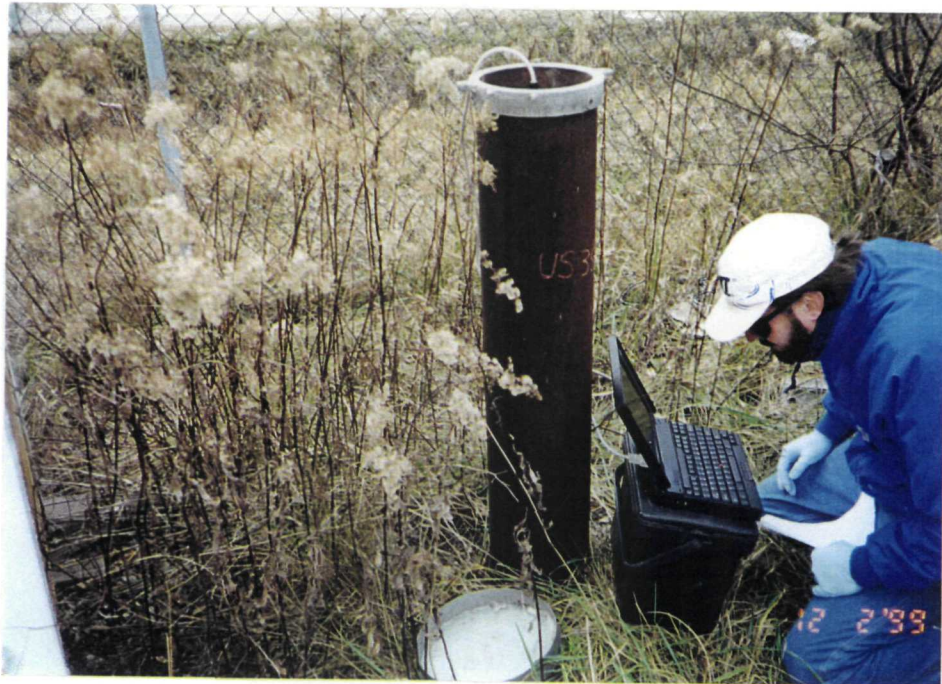


Photo 17: 12\2\99 - Calibrating transducer in US3-S



Photo 18: 12\2\99 - Placing transducer in US3-S



Photo 19: 12\2\99 - US3-D, US3-I, US3-S



Photo 20: 2\7\00 - Drilling rig setting up at R1-D



Photo 21: 2\7\00 - Close up of drilling

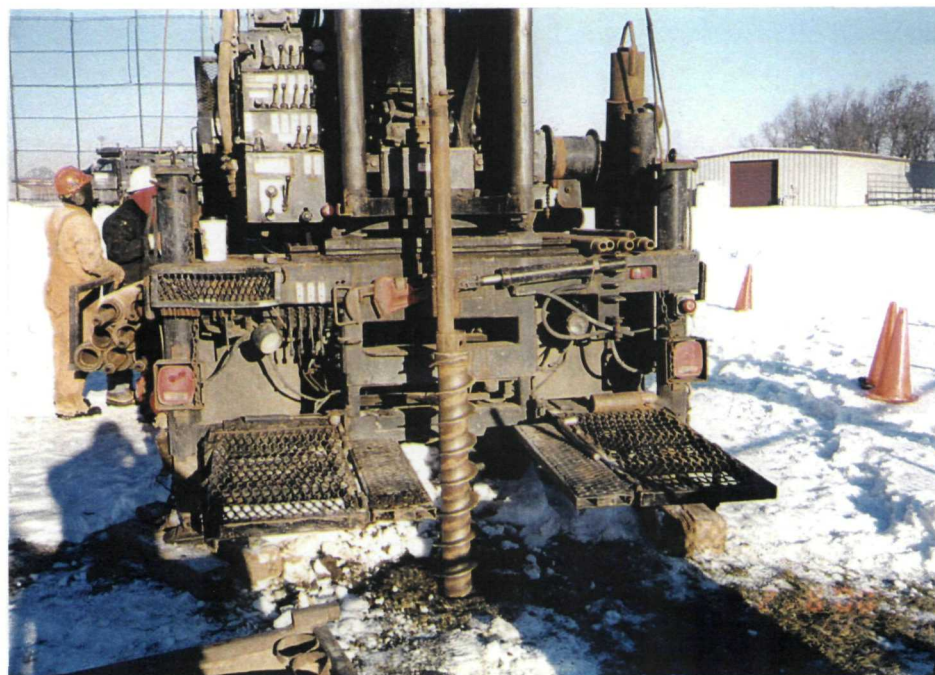


Photo 22: 2\7\00 - Drilling at R1-D with hollow stem auger



Photo 23: 2\8\00 - Drilling at R1-D



Photo 24: 2\8\00 - Drums for drill cuttings at R1-D

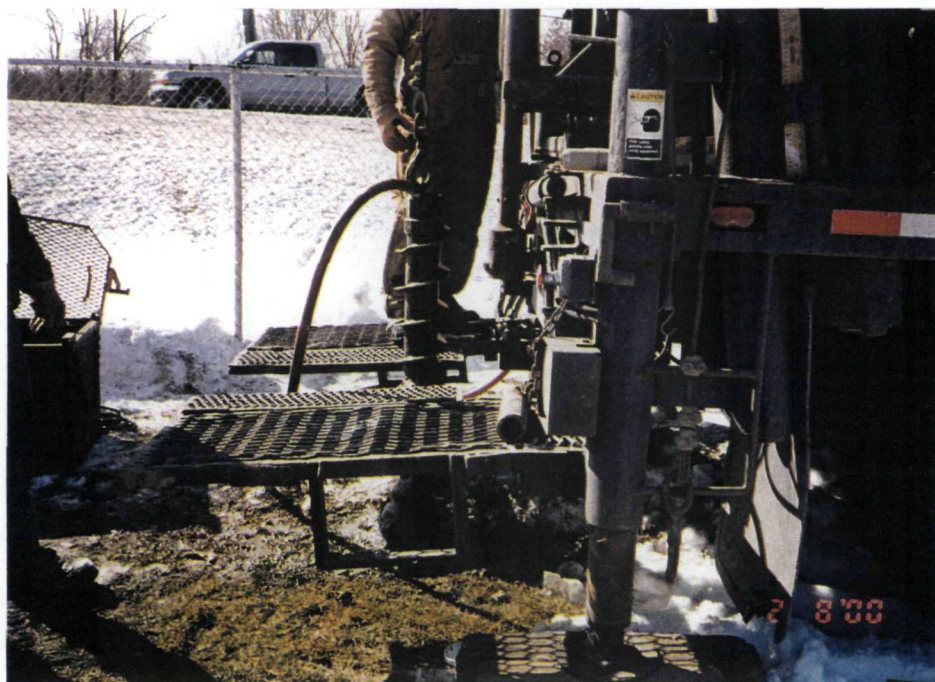


Photo 25: 2\8\00 - Pulling augers at R1-D



Photo 26: 2\8\00 - Setting up steel casing at R1-D



Photo 27: 2/8/00 - Drilling at R1-D using mud-rotary techniques



Photo 28: 2/8/00 - Drilling at R1-D



Photo 29: 2\9\00 - Preparing to set well at R1-D



Photo 30: 2\9\00 - Sand in split spoon at R1-D



Photo 31: 2\9\00 - Setting well at R1-D



Photo 32: 2\9\00 - Placing sand around well screen at R1-D



Photo 33: 2\16\00 - US5-D well



Photo 34: 2\17\00 - R1-D well



Photo 35: 2\17\00 - R1-D well



Photo 36: 2\17\00 - R1-D well



Photo 37: 2\17\00 - US2-D well



Photo 38: 2\17\00 - US2-D well



Photo 39: 2\17\00 - US5-D well



Photo 40: 2\17\00 - Leachate tanker



Photo 41: 2/17/00 - Pouring purge water in leachate manhole



Photo 42: 2/17/00 - Sampling W3-D



Photo 43: 2\17\00 - US6-D well



Photo 44: 2\21\00 - Collecting sample at US3-D



Photo 45: 2/21/00 - Sampling US3-D



Photo 46: 2/21/00 - Sampling US3-D



Photo 47: 2\21\00 - Sampling US4-D



Photo 48: 2\21\00 - Sampling at US6-D



Photo 49: 2\21\00 - Data logger set up at R1-D for slug test



Photo 50: 2\21\00 - Dropping slug into R1-D

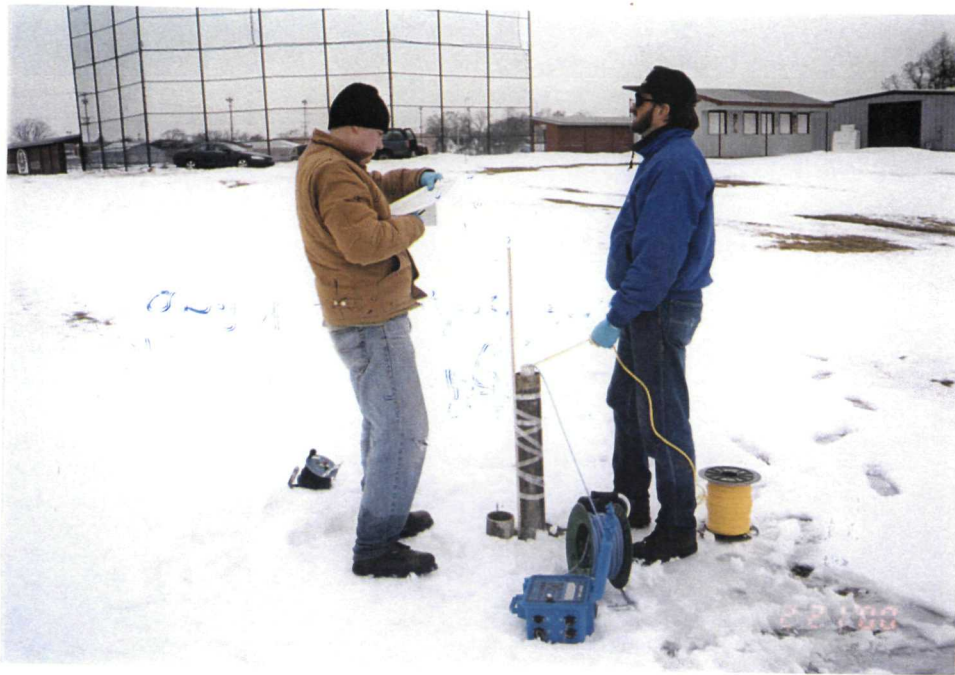


Photo 51: 2/21/00 - Preparing to perform slug test at R1-D



Photo 52: 2/21/00 - Checking water level at R1-D



Photo 53: 2\21\00 - Reading data logger at R1-D

COPIES OF THE FIELD LOGS

11/9/99

(38)

No magnetohelic pressure measurements were conducted because there were no sealed wells under pressure at the site. All flares were cut off gas vents preventing sealing in. Pressure observations in RMT notes are qualitative based on field observation.

12/2/99

(39)

9:30 meet Rob Hafemeister from EMT at HOD

proceed to wells at Malenkoff Enterprises

wells US3 I + US3D + 3S

photo 1 & 2 wells US3I + US3D

photo 3 well US3S

9:55 dedicated pumps in US3 I + ^{US}3D no pump in US3S

Rob measures water level in US3 S will install { water level
dedicated transducer { 9.6' below
top of riser

12/2/99
10:00

photo 4 putting transducer
in US3S

transducers have digital
recorder - data
downloaded to laptop

photo 5 laptop setup
for initialization

10:20 dedicated bladder
pump is in US3D

Rob calls office to
check what to do
because dedicated
transducer won't fit
in well

12/2/99

(41)

10:30 RMT office advises
Rob to wait for USEPA
rep to arrive and confer
with him about pulling
bladder pump in 3D
and installing transducer

Rob measures water level in
US3D 43.03' below top
of riser

1035 water level in 3I
39.45' below top
of riser

1053 move to measure water
levels at W4S

12/2/99

(42)

photo 6 W45

water level in W45
9.15' below top
of riser

1100 arrive well 2D

photo 7 well ^{W5} 2D looking
north

water level
44.79' below top of
riser

1110 Ron Marowski arrives site
gives Rob ok to remove
pump in 3D and
put in transducer

12/2/99

1120 pump removed from
4D ^{W5} 3D
Rob will put in
transducer

^{W5} 3D - 43.08' below top
of riser

photo 8 - Rob placing transducer
in 4D 3D

1130 Rob hooking up laptop
to calibrate transducer

1140 transducer calibrated

12/2/99

1:50 arrive wells 30
W3SB W3SA

2:00 water level in
W3A W3SB
5.78' below top
of riser

wells W3D W3SB and
W3SA are in
seasonal wetland
south of landfill.

water level in W3SA
5.58' below top
of riser

12/2/99

1215 bladder pump pulled
from W3D.

water level in W3D
39.56' below top of
riser pipe

photo of placing transducer
in W3D

1220 Rob is calibrating
transducer in W3D

1230 W3D data logger calibrated

1240 water level in W3SA
5.58' below top of
riser

12/2/99

1245 Rob places transducers
in W35A and
calibrates it

photo 10 wells W30
W35B
W35A

1325 arrive 55
water level
12.38' below
top of riser

photo 11 wells 55
US4D
US4S

12/2/99

1330 water level in
US4S

12.59' below top of
riser

water level in US4D

46.04' below top of
riser

1335 arrive US6D
R103

water level in
US6D 43.75' below top of
riser

water level in US6S 8.88'
below top of riser

12/2/99

protective tops of
US6S and US6I
have been vandalized
and removed

water level in US6I
25.90' below top
of riser

photo 12 US6S, D & E

1350 arrive well # PZ 3U
water level
5.10 below top
of riser

1355 arrive well # PZ 4U

photo 13 PZ 4U

12/2/99

water level PZ 4U

5.31 below top of
riser

1400 arrive G14S, G14D

water level in G14D
8.44' below TOC

photo 14 G14S, G14D

water level G14S
10.62' below TOC

1415 arrive well W8D

water level 41.56'

photo 15 well W8D
below TOC

12/2/99

well W8D is 95.8' deep

1420 arrive W7D
water level 55.94' below
TOC

photo 16 well W7D

425 Arrive P2-1

photo 17
water level 61.20'
below TOC

1430 arrive W2D
water level 46.11' below TOC
photo 18

12/2/99

1435 arrive well U57S

photo 19 U57S

water level 9.94' below TOC

1445 arrive G11S, G11D

photo 20 G11S

water level of G11S
8.13' below TOC

1455 arrive U55D

photo 21

water level 40.90' below TOC

12/2/99

1515 arrive
USIS USID

photo 22 USIS USID
water level
USIS 7.31' below TOL

1530 Rob places transducer
in USIS

water level
USID

42.45' below TOL

1535 Rob sets transducer
in well USID

12/2/99

1535 Rob calibrating transducer
with laptop computer

1540 transducer calibrated
Joe & Rob leaving
site.

2/7/2000

0:00 arrive HED landfill

Pete Chase of RMT
arrives site

1:00 Larry Beiche of
Waste Management
arrives - shows Pete
hydrant to get
water for drilling

- Drilling discussed -
will use hollow stem
augers to ~ 20 feet,
set casing to case
off fill and shallow
water, then mud
rotary drill to ~ 115 ft

2/7/2000

11:00 Drillers arrive
Boat - Longyear 800
Oshkosh Wisconsin 236
4923

Photo 1 well location at
Antech High School

BK-B1

Boat Longyear
owns Bramard - Kilman

Photo 2 drilling position

12:00 Boat Longyear BL
support truck returns
with water -
preparing to drill

2/8/2000

well will be 4 RID

1211

No evidence of locust

RINT has collected

Julie to confirm

that utilities were
marked

1225 Drillers set up working
for locate

Drill rig will not shut
down, emergency
shut off not
working

Key not working
driller trying to
shut rig down

2/8/2000

0800 arrive site -
Pete and 2 drillers
on-site with different
drill rig - drillers setting
up for start of augering

0820 Drillers begin augering
hole

photo 3 drilling setup

0840 First split spoon
brown - tan clay

0850 2nd split spoon

Pete will collect split
spoons through 1st
~ 20 feet to determine location

2/8/2000

0850 3020 spoon
silt w n fine sand

0955 4 m split spoon
gray clay

0910 Boy 4 Piscotti from
the Illinois Geological
Survey stop by site
say they are
working in the area

1000 Drillers reach 20 ft
go to get water

2/8/2000

On Patel a Row
arrive site

1040 Drillers back with
water

will mix bentonite grout
place down augers,
pull augers, put in
seal off casing

then begin rotary
drilling

1100 Grout mixed
augers pulled
casing to be placed in
hole

2/8/2000

1330 Drillers now
rotary drilling
split spoon samples
every 5'

1400 31'-33'
drilling in gray till

2/9/2000

0800 crew drilled to 63'
on 2/8/00
drilled to 67'-
went to fill water
tank on support
vehicle

0845 Drillers return
begin drilling
still in gray clay till

1045 Now at 81'
took split spoon 81-83
still in till

2/9/2000

1130 split spoon
86'-88' -
18" all fine grained
sand

Driller said sand
started about 85'

1245 split spoon 91'-93'
all fine grained sand

1333 split spoon 96'-98'
fine grained sand
Ree directs drillers
to drill to 100'

2/9/2000

1100

Drillers breaking down
rod - hole drilled
to 100'

1415 drillers putting
riser pipe + screen
down hole

1433 Drillers flushed out
mud with clear
water - begin adding
sand - bottom of well
set at 100'

1445 J. Burns discusses
with Sue From
RMT the setting
of top of screen

RMT to set at
3' below bottom
of clay -

coarse sand to
85 fine sand

to 82

J. Burns informs
Weston

that screen should
be set at bottom
of clay

Weston & Ron from
EPA agrees

RMT informed but
goes with original
plan

Top of screen at
88.5' bgs
coarse sand to 85
fine to 82

Bentonite pellets
to 77'
 Bentonite grout
to 3' bgs

2/16/2000

0915 Rob from RMT arrives
site
proceed to well 5-D
to sample USS-D

purge will be min 3X
well volume

sample will be based
on stabilization of
pH, temp, spec and
pH < 10

1016 Rob is preparing
sample bottles - adding
preservatives, labelling, etc

2/16/2000

1016 each well will be
tested for

VOC

major cations

alkalinity

chloride

sulfate

nitrate

nitrite

total kjeldahl nitrogen

ammonia

orthophosphate

BOD

TOL

methane, ethane, ethane

not
this round phospholipid fatty acid bioassay

~~TDS~~ TDS

1036 Rob notes that bottles
provided by lab have
TSD & sulfate in same
bottle

2/16/2000

however sample plan says
TSD should be ~~filtered~~
sulfate not filtered

1040 Rob is making call
concerning sample jars.

premade sample labels are
marked STL Buffalo

coders are marked

RE CRA, Amherst N.Y.

according to Rob, samples
will be shipped to RE CRA

1105 Photo 1 well 5-D
Photo 2 11-D
well 5-D

2/16/2000

Rob is calibrating
pH
cond.

Rob spoke with Sue

TDS will be collected
in bottle formerly
labelled nitrate

nitrate & sulfate will
be collected in bottle
formerly labelled
TDS

2/16/2000

between noon & 3 pm

Rob moved sample jars
& equipment to well
SD location - had

trouble calibrating instruments

Turbidity meter does not
work had trouble

starting engine on
compressor for well

air/d pump - finally
got it started

3:00 pm Joe leaves
site

2/17/2000

0815 JC arrives site
Rob set up at
new well R-1-D

Rob is calibrating
instruments

photos:

R-1-D.
R-1-D
truck & equipment

0830 Rob has instruments
calibrated - is now
labelling sample
bottles

2/17/2000

0900 Rob purging well
will purge until
pH, cond, stabilize
minimum 3X well volumes
pump purging at
1/2 liter/minute
est time 200 minutes

0920 Rob informs J.C.
that he did not remove
3X well volumes from
pump 5D and it will
need to be sampled again

2/17/2000

Rob stated that he
project until parameters
were stable.

0345 Discussion with
Mark Townsend —
with micro pump technique
~~for~~ But will purge
3 x well screen volumes
+ tubing from pump volume
(assumption: water above
not mixed in)
10 ft well screen
also — plan calls for
testing for dissolved
phase volatiles — distribute
throughout aquifer

2/17/2000

Not looking for non aqueous
phase or product phase
volatiles

1040 well R-1-D sampled
Rob parking up to
move to US-2-D

1105 Rob went to
leachate tank & pump and
land fill & pumped purged
water then proceeded to
US-2-D

2/17/2000

Rob measures water level
in US-2-D
45.05 below top of
inner riser pipe

120 Rob is setting up
well wizard pump
in well

1155 Pump operating
Rob is labelling sample
bottles and calibrating
instruments

2/17/2000

1240 3 x well + tubing
volumes pumped
from US-2-D
pH, temp, and stabilized

Rob ready to collect samples

1250 Rob has sample bottle,
ready - begins to
take samples

1330 well purged Rob
collected well sample
and duplicate

2/17/2000

1340 Rob is packing
up gear getting
ready to move on

1400 spoke with Don Patel
Don instructed ~~me~~
to stay on-site
until Rob is done
sampling for the day

1415 Rob empties purger
water into man-hole
near tank
Rob also labels sample
jars for 5-D

2/17/2000

1430 Rob sets up pump
at ~~R~~ ^{US} 5-D
and begins purging
water while calibrating
ph meter and meters
also oxidation/reduction
potential

US 5 D has 6'
well screen

1500 well purged Rob
preparing to sample

2/17/2000

1515 Lance from
PMT arrives
to assist Rob
in sampling.

At each well Rob
is measuring
dissolved O_2 &
iron with
chemets colorimetric
tubes

2/17/2000

1530 lance is filling sample
bottles, lance Rob
carrying equipment
back to staging area

1550 equipment packed
proceeding to
well location
W3D

Rob will first dump
water in leachate
manhole.

1610 Rob setting up
pump at well W3D

2/17/2020

1700 5 gallons pu. out

from 103 D

Lance 100

checking
parameters

Screen volume
is .98 gallons

purge rate is
 $\frac{1}{2}$ liter/min

2/17/2020

Rob & Lance had
to adjust pump so
flow rate = .5 l/min

1705 Rob starts taking
stabilization readings

1720 pump control
box stops operating

Note: Turbidity meter did not
work on 2/16 & 2/17 thus
no turbidity readings taken

2/21/2000

0830 Rob & Lance
setting up at well

US-6-D

No samples were
collected on 2/19/2000

photo -

US-6-D site

0900 Lance is calibrating
pump to produce
 $\frac{1}{2}$ liter/min

3 screen volumes + tubing

= 3.6 well volumes

6 ft well screen

2/21/2000

0815 Rob & Lance take
initial turbidity, pH
& cond readings
& Eh (redox potential)

0950 Rob contacted his
office - turbidity
should be less than
 10^{10} NTU
to take sample
with max of 6

Screen + tubing volume

105 turbidity is not
approaching 10 (it is
around 100) so

2/21/2000

Rob & Lance are
purging 6 well volumes

1030 Rob & Lance are
filling sample jars

Lance takes DO
& iron readings
with vacuum pipettes

1050 Rob & Lance complete
sample collection

at Bakken
US-6-D
will be moving to
US-4-D

First Dumping purge
water out headspace
in anhydrous

2/21/2000

1115 arrive US-4-D
photos US-4-D

1120 Rob & Lance are
setting up equipment
at US-4-D
getting ready to purge
US-4-D has 6'
well screen

1125 Rob begins purging
well

1225 Turbidity not reaching
10 - 6 volumes will be

2/21/2000

1240

Rob is collecting
samples

He will do an
atmospheric blank
by pouring water
from a lab supplied
bottle into voc
bottles - voc
only

1300

sample bottles filled
Rob & Lance going
to dump purge water
in man hole

2/21/2000

1330

Rob & Lance have
emptied the purge
water into the leadcraft
man hole and ate
lunch - now setting
up at US-3-D

1345

purge pump actuated
purging process has
begun

5' well screen +
tubing volume =

1 gallon per volume

3 gallon min purge

2/21/2000
1400 purging well US-3-D
ph cond eff +
hub meters all
calibrated prior to
each well purge

1435 6 screen & tubing volumes
purged from US-3-D
Rob & Lance to
collect samples

1500 all samples collected
Lance & Rob packing
up - will ~~to~~ empty
purge water

2/21/2000
at Leakey washhole -
the do slug test
at R-1-D

1517 all equipment and
materials packed up
leaving US-3-D.
Lance & Rob go
to empty purge water

1540 Rob setting parameters
on data logger

2/21/2000

1550 taking water

level at R-1-D

49.56 below

pg at PVC riser

1600 Rob put transducer
in well, then slug

Lance tracking

well recovery

well equilibrated back at
49.56 below ^{top} PVC riser

2/21/2000

1610 First slug test
completed

Rob will do a
second

1615 water level
49.58 below ^{top} of
PVC

Rob put down slug
Lance measuring water level

1625 recovery to 49.57

1628 start slug test

Hermit 3000 data logger

2/21/2000

1640 slug test complete
Lance taking final
water level reading
49.58 below top of
PK

3/20/2000

1000 RMT arrives site
set to sample R-1-D
at High school athletic
field

Jim Burton → Weston
call if problem

847-918-4000

weather conditions
rain 45°F

RMT calibrates instruments
for pH, temp, cond, redox
potential

120/2000

2 RMT ready to
purge well

17 purged 6 well volumes
parameters did not
stabilize

10 well sampled
RMT collecting equipment

0 RMT Breaks for lunch

0 water dumped at beachside mantle

0 arrive ~~US~~-5-D

^{US}
RMT setting up

Rob will calibrate
instruments

3/20/2000

1410 purging US5-D

1500 Jax Cans Cans
site